Supplement Use in the Military

CDR Raymond Emanuel, MD
CPT Millard Brown, MD
Tripler Army Medical Center

Objectives

- Understand the physician-patient interaction in eliciting supplement use
- Understand the effect of supplement use on psychiatric practice
- Review current research being performed

Supplement use in the United States

- 1990 – $94 million business
- 1996 – $3.24 billion business

- 1971-74: 34% of people used a vitamin or mineral
- 1994-95: 42% of males and 56% of females used a supplement

Supplement Use in the Military

- 2215 males entering Special Forces and Ranger training; mean age 25 yrs
- 85% reported past or present use
- 64% reported current use
- 35% reported daily use

- In males 20-39 yrs old in general public only 39% report at least occasional use

What are they using??

Those reporting at least occasional use

- 37% multivitamin
- 27% sports bars
- 20% Vitamin C
- 18% Pro-Performance
- 17% Creatine
- 10% Amino Acids
- 8.7% Ginseng

Ingredients

Most Common Reasons for Supplement Use Among Athletes

- General health and performance
- Reduction of exercise fatigue
- Increase in muscle mass
- Weight gain
- Stress reduction

Creatine

Military Supplement Users

- Better APFT scores
- Lifted weights more often
- Smoked less
- More likely to exercise daily

Reasons People Seek Alternative and Complementary Therapies

- 37% Chronic pain
- 31% Anxiety
- 31% Chronic Fatigue and “other” ailments
- 24% Headaches

- Among psychiatric reasons
  - Anxiety and Depression most common

Herbal Use Among Psychiatric Patients

- 1998 New Clinical Drug Evaluation Unit at University of South Carolina
- 56% of 150 people screened had used herbal medicines in the last month
  - 48 people used them for psychiatric reasons

Physicians Don't Know… Patients Don't Tell…

- 1990 – 72% of users of complementary medicine did not tell their physicians
- 1997 – 70% did not tell their physicians

Are patients fearful of their physicians' response?

Should they be??

Physicians Are Not Trained in Supplements and Herbs

- 69% of providers indicated no education received on herbs or supplements
- 71% stated they were asked about them at least twice a month

St John’s Wort

St John's Wort

- *Hypericum perforatum*
- Active components
  - Pseudohypericin and napthodianthrones
- In vitro MAO A and MAO B binding
- Benzodiazepine receptor
- $GABA_A$ and $GABA_B$ receptors
- $5HT_1$ receptor

St John's Wort
Meta-analysis of 23 studies

- SJW significantly superior to placebo
- SJW similar in efficacy to low dose TCAs
  - Most studies in mild depression

- TCAs in higher doses had siginificantly greater decreases in HAMD scores

St John's Wort
Side Effects

- 19.8% reported side effects with SJW
- 52.8% reported side effects with TCAs

Side Effects

- GI effects - N/V
- Fatigue
- Photosensitivity
- Headache
- ? Neuropathy
- ? Sedation
- ? Adynamic Ileus
- ? Transaminitis

St John's Wort
Dosing

- Typical starting dose is 900mg/d
- Can divide into TID dosing
- Some studies used 1800mg/day

Kava kava

Kava kava

- Ceremonial drink of Polynesia, Micronesia
- *Piper methysticum*
- Kavapyrones and kavalactones used
- Believed not to bind to GABA
  - Hippocampus and amygdala involved
- Kavapyrones – skeletal muscle relaxants and anti-convulsants
  - Inhibit sodium and calcium channels

Kava kava

- 5 human trials in Germany on humans
- CGI, HAM-A, DSI
- 4 wk trial showed significant decr in anxiety

Kava kava and Oxazepam

- 164 patients with DSM III-R anxiety d/o
- 210mg kavapyrones were equivalent to 15mg of oxazepam in HAM-A reduction
- Oxazepam had negative impact on performance test while Kava had none
- No tolerance to Kava even after 24 weeks

Kava kava
Side Effects

- Mild GI complaints
- Allergic skin reactions (1.5%)
  - Kava dermopathy – a scaly dermatitis
- Alcohol NOT additive

Ginseng

Ginseng

- *Panax ginseng* and *Panax quinquefolius*
- Affinity for progestin, mineralcorticoid,and glucocorticoid receptors
- Inhibition of platelet aggregation
- Inhibits uptake of GABA, NE, 5HT, DA

Ginseng

- 8-week placebo controlled trial
- 60 patients in geriatric unit
- No differences in outcomes
  - Length of stay
  - ADLs
  - Cognitive function
  - Somatic symptoms

Ginseng

- 31 healthy men- no help in treadmill testing
- 20 men in a Thai study- no immune system effect
- Type-II DM – helped with fasting glucose
- Swedish and Mexican studies showed improvement in memory and fatigue

Ginseng Side-effects

- High BP, insomnia, uterine bleeding
- Avoid preparations with germanium b/c of nephrotoxicity
- Possible hepatotoxicity

Valerian Root

Valerian Root

- *Valeriana officinalis*
- German Commision E says to use 2-3g of dried root one or more times a day for “restlessness and nervous disturbance of sleep
- CNS activity due to valepotriates of the volatile oil
- Inhibits GABA breakdown in vitro
- May bind to barbituate and $GABA_A$ receptors

Valerian Root

- 128 person study of those with insomnia
  - Decrease subjective sleep latency scores
  - Improved subjective sleep quality
  - No morning after somnolence
- 10 patient sleep lab study
  - 900mg of valerian no different than placebo
- 20 person study with insomnia
  - By week #2 most rated valerian as extremely helpful

Valerian Root
Side Effects and Dosing

- Fatigue, abd pain, tremor, mydriasis
- One report of withdrawl after 5 years of 530-2000mg five times per day for years
- May antagonize effects of alcohol

Research Goals

- Document supplement use rates in the military
- Ascertain the most popular agents used
- Learn the motivation for taking supplements
- Document provider bias towards supplement use
- Document patient bias toward physician involvement in supplement use decisions

Target Population?

- General Military Population
  - Community Health Nursing
  - Other medical clinics
- Psychiatric Outpatients
  - POPS, CMH, DMH
- Psychiatric Inpatients

Proposed Project

- Survey incoming E1-E5 soldiers at Community Health Nursing
- 400-500 per month
- Incorporate survey into dietary / nutritional counseling
- Possibly compare rates to medical and psychiatric clinics

Supplements

Why should we care about supplements

- Prevalence of use
- Lack of standards
- Patient Care

General Background

- Long history of botanical remedies in US..
- Appeals to rugged individualism
- 30% of all modern drugs derived from plants.

- Managed Care and Insurance Coverage of alternative care
  - 45 states have mandatory insurance coverage of chiropractic treatment
  - Acupuncture in 7 states
  - Naturopathy in 2 states
- Supplements already covered in Germany

- Office of Alternative Medicine by NIH in 1992

Regulation of Industry

- Lobby against FDA setting guidelines for supplement industry
- 1993 compromise, the Dietary Supplement and Health Education Act (DSHEA) created "supplement" category which includes:
  - Vitamins
  - Minerals
  - Herbs
- DSHEA does **not** require:
  - proof of efficacy
  - Proof of safety
  - Standards for quality control

Result of Lack of Regulation

- Cannot determine if active ingredient are actually in product
- Bioavailability of active ingredients
- Standard dosage from company to company or from batch to batch of the same product- potency of various products from the same plant can vary **10,000** fold.
- What else may be in the ingredients, e.g., contaminants
- Extracts more potent than forms commonly used in cooking

Evidence Basis

- Controlled studies not profitable- no profit motive to conduct research
- Difficulty with no standards in USA
- In USA benefit mainly based on anecdotal report.

Patients

- 34 yo MWF AD 04 with exacerbation of her bipolar Disorder
- 25 yo Dependent spouse with psychosis NOS
- 32 yo SBF ADA 02 with mood lability and increased panic attacks

Patients (cont)

- Pts may delay start of effective treatments
- Studies show that patients who use herbs and other alternative treatments are more likely to abandon potentially beneficial conventional therapy when they face illness.

Web Based Information

- MEDWATCH
  - http//www.vmcfsan.fda.gov/~dms/aems.html
- ASPET Herbal and Medicinal Plant Interest Group
  - http//www.faseb.org/aspet
- American Botanical Council
  - http//www.herbs.org